ENGINEERING NEWS-RECORD

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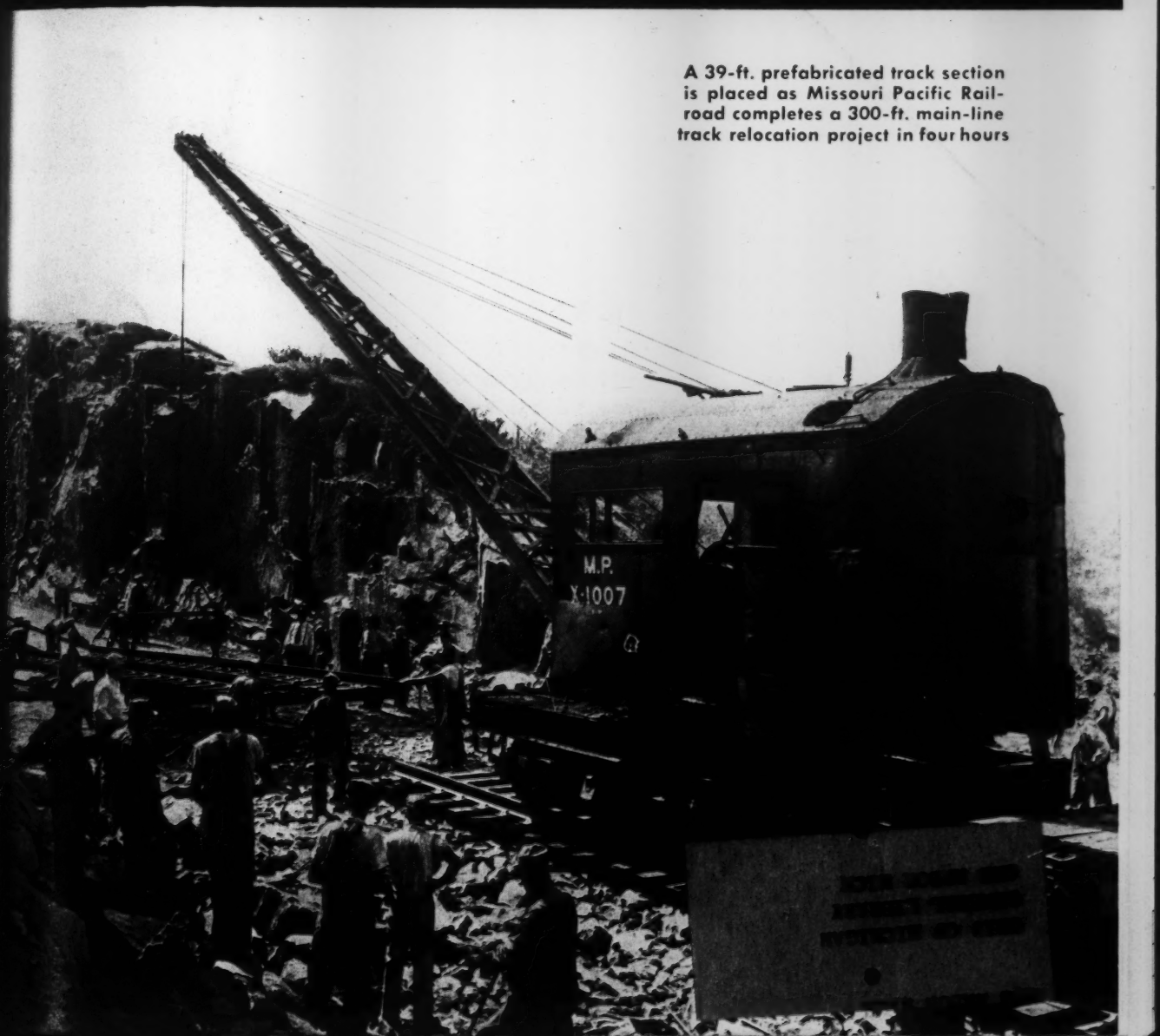

A 39-ft. prefabricated track section is placed as Missouri Pacific Railroad completes a 300-ft. main-line track relocation project in four hours

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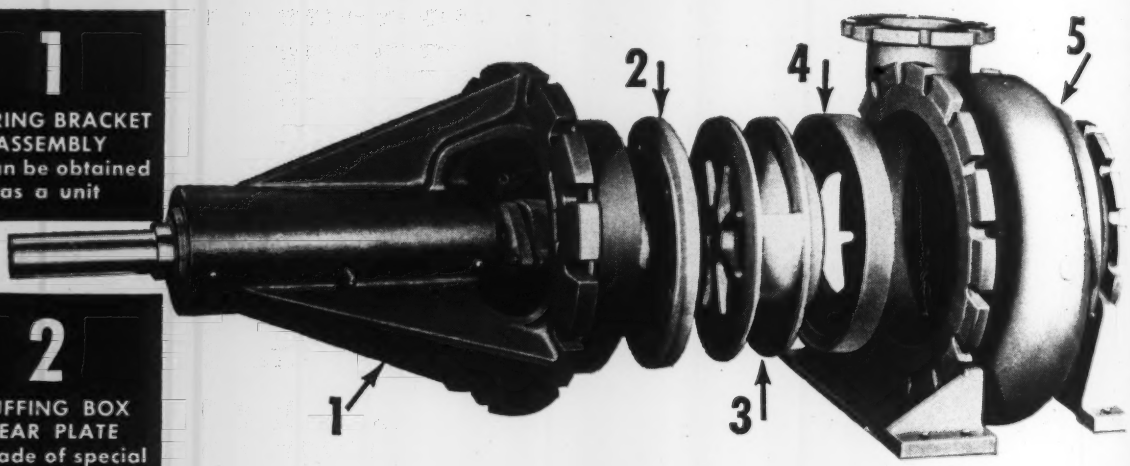

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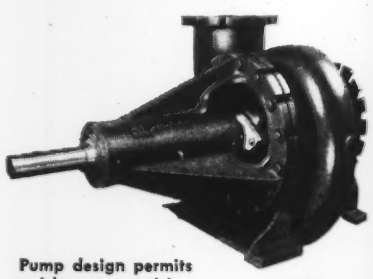

Pump design permits quick, easy servicing of stuffing box and adjusting of wearing clearances.

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News of the Week

ENGINEERING NEWS-RECORD • NOVEMBER 20, 1947 • VOLUME 139 • NUMBER 21

New airport standards set to speed development work

Civil Aeronautics Administration specifies runway length and loading on federal-aid projects—Divides airfields into six classifications according to service

In a far-reaching order that in effect classifies all U. S. airports by purpose, the Civil Aeronautics Administration last week set maximums on length and strength of airport runways for which federal money will be supplied.

An order issued by T. P. Wright, administrator, named six classes of fields, ranging from "Feeder Airports" with runways of 3,500 ft., to "International Express Airports", with runways 8,400 ft. long. It was seen as a major step in getting actual work under way on a 7-year, $1,000,000,000 federal-aid airport program authorized by Congress in 1946 (*ENR* Feb. 20, vol. p. 295). The program is expected to result in the construction of about 4,400 airports of all sizes within the prescribed period.

Announced after a series of informal conferences over desirable airport runway length (*ENR* Nov. 6, vol. p. 629), the order sets up the following six airport classifications, with runway lengths and widths, and single-wheel pavement loading factors:

Feeder Airports—Runways 3,500 x 100 ft., loading 15,000 lb.; Local airports—runways 4,200 x 150, loading 30,000; *Express Airports* — runways 5,000 x 150 ft., loading 45,000 lb.; *Deluxe Airports* — runways 5,900 x 150, loading 60,000 lb.; *International Airports* — runways 7,000 x 200 ft., loading 75,000 lb.; and *International Express Airports* — runways 8,400 x 200 ft., loading 100,000 lb.

Guide for planners

The runway lengths established are for airports at sea level, assuming an average temperature of 59 deg. F. These lengths will be increased for airport elevation by 7 percent for each 1,000 ft. above sea level, and one-half of one percent for each degree by which the mean temperature of the hottest month of the year exceeds the standard. Runway gradient will also be taken into account in determining length.

The new order will serve as a guide to CAA engineers regarding approvals and recommendations for runway design, Mr. Wright said. Additionally, he said, it will indicate to sponsors of airport projects the extent to which federal funds will be applied, and will aid manufacturers and operators of transport-type aircraft by providing a standard for the type, length and strength of runways to be available at any given airport.

"It is believed," Mr. Wright told industry representatives, "that this order will assist the air carriers in planning for the future acquisition of the type of equipment that can be used on airports with standardized runways."

It is anticipated that feeder airports will serve smaller cities and the others larger communities and more important junction and terminal points.

Opposed by flyers

Mr. Wright noted that representatives of aircraft industries, and pilots' associations had opposed the standardization plan on the ground that such a move would impede development; but that municipal groups were in favor of the standardization as a spur to development of better aircraft and operating procedures, and because it would relieve taxpayers of the constant burden of improving and expanding airport facilities in order to retain air services.

Copies of the order, known as Technical Standard Order No. N-6, are available from the Office of Aviation Information, CAA, Washington, D. C.

Although Congress cut CAA's appropriation for airport work during the year by nearly half (*ENR* May 15, vol. p. 797), some 83 projects are now under way, reports indicate. First project approved under the program was a $647,230 airport construction job at Twin Falls, Idaho.

FHA insurance fund seen near exhaustion

The record rate at which veterans housing is being built in the United States is so great that Federal Housing Authority insurance for both veterans' housing for sale and for rental will be exhausted by the end of November, according to Edward R. Carr, president of the National Association of Home Builders.

Mr. Carr made his statement during a Washington, D. C., board meeting of the directors of NAHB. "We have been informed by the FHA that because of the enormous volume of applications for Title VI insurance for rental and sale housing for veterans, the present authorization of $4,200,000,000 will be exhausted some time before the third week in November," Mr. Carr said. As of the end of September, there remained $335,000,000 of authorization, but with applications coming in at the rate of $50,000,000 a week, this balance will be taken up before Thanksgiving."

Maine Turnpike opening set for December 1

The $20,000,000 Maine Turnpike, connecting Kittery and Portland, Me., will be opened to travel on Dec. 1, William B. Getchell, executive director of the turnpike authority, said last week.

Mr. Getchell said that passenger car tolls will be fixed at 50 cents, and maximum toll for heaviest trucks and buses will be $1.50.

An article giving the complete engineering story of this super-highway will appear in *Engineering News-Record* in the Nov. 27 issue.

Open Conn. parkway section

The nine and one-half mile Hamden-Wallingford section of the Wilbur Cross Parkway in Connecticut was officially opened to traffic Nov. 14. Work on the section was started in 1941, halted by the war, and resumed late in 1945.

Since a good deal of work remains to be done on the 4-lane roadway a speed limit of 40 mph. has been set.

NEWS IN BRIEF

In telegraphic form, here are latest news developments on the engineering and construction front during the week.

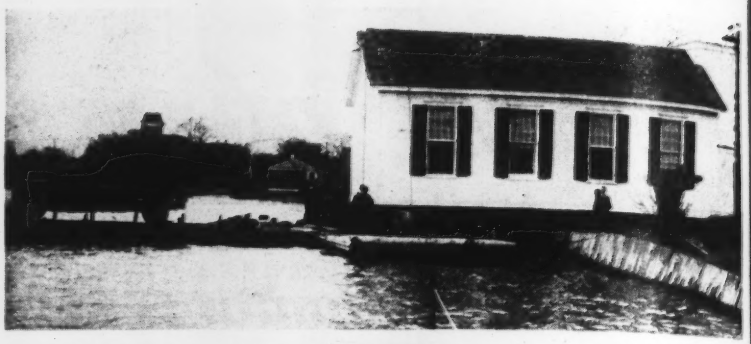
Public construction—Bids are to be opened Dec. 18 for a new $3,000,000 high school at *Corpus Christi, Tex.* . . . A $500,000 inter-community hospital is being planned near *Buffalo, N. Y.* . . . A Methodist hospital to cost $3,000,000 is planned for a site at Dundee Road and Emerson Avenue, *Louisville, Ky.* In the same city, ground has been broken for a $500,000 memorial chapel at the Southern Baptist Theological Seminary.

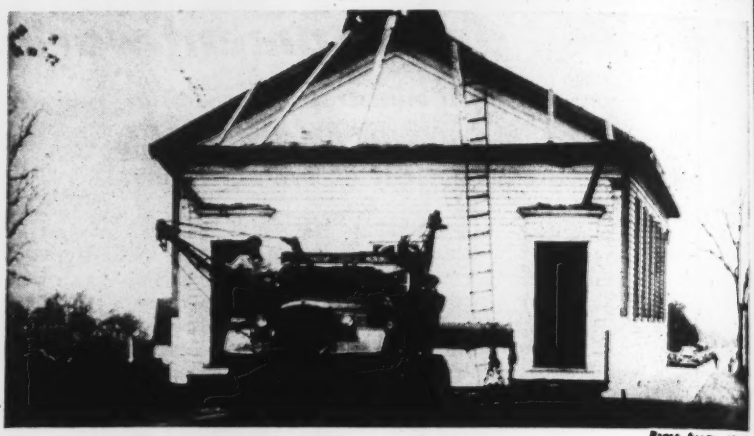
Industrial construction—Newport Industries, Inc., has just completed a $5,000,000 naval stores plant at *Oakdale, La.* . . . Piling is being driven for two buildings at *Longview, Wash.*, to cost $1,000,000 to house a newsprint plant of the Pacific Paperboard Co. . . . Sperry Products, Inc., of Hoboken and Weehawken, N. J., will start building at once a $1,000,000 plant at Danbury, Conn. Fletcher Thompson, Inc., Bridgeport, Conn., planned the project and Bernard J. Dolan, Bethel, Conn., is the general contractor. . . . Youngstown Sheet and Tube Co. has authorized construction of a 75-oven by-product coke plant at the firm's *Indiana Harbor, Ind.*, plant . . . Gulf Oil Corp. has announced plans for improvements to its refinery facilities at *Cincinnati* and *Toledo, Ohio*, to cost $20,000,000 . . . H. P. Wasson & Co., *Indianapolis, Ind.*, department store, has awarded a contract for an 8-story addition.

Highways—An extensive traffic survey will be made by the Delaware State Highway Department in the *Wilmington* area, tying in with a similar survey around *Philadelphia, Pa.* . . . In *Arizona* bids will be received this month on $4,445,000 worth of highway work. The highway department has also projected erection of a bridge over Queen Creek, near Superior on U. S. Highway 60 and 70. The bridge will be a part of a $1,000,000 program.

Housing—A thousand new houses to cost a total of $10,000,000 will be built at *Wantagh, N. Y.*, on the road to Long Island's famous Jones Beach, the builders and developers being Winston-Holzer Associates . . . Fred Inganamort, who has completed several large apartment and dwelling projects in New Jersey since 1932, is now starting the simultaneous construction of three housing developments in *Bergen County* for 430 families . . . Construction has started on a $2,000,000 apartment development —Boise Hills Village, Inc.—at *Boise, Idaho* . . . Preliminary plans for a proposed $5,000,000 to $6,000,000 apartment project at *Wilmington, Del.*, to contain 610 family units, have been filed with the New Castle County Regional Planning Commission.

Sewers—Preliminary plans for a sewage disposal plant at *Utica, N. Y.*, have been completed. . . *Salem, Ore.*, has tentatively approved a $1,445,000 sewer development program. . . . Fifteen sewage disposal plants either are under construction or have just been completed in *Oregon*, according to Curtiss M. Everts Jr., state sanitary engineer, and sewage disposal is being considered in another 86 communities at an estimated total cost of $28,321,278. Total cost of the 15 plants just finished or under construction is estimated at $857,622, with plans completed for three more plants costing $633,000. Plans are under way for 18 additional projects, costing $3,987,754, while preliminary studies are being made on 17 other projects.





Press Assn. photo

Churches Move to Congregations *— Religious groups in communities in Michigan and Long Island (New York) solved their "housing" problems recently by purchasing complete church buildings and moving them to desired locations. At top, a 75-year-old Methodist chapel is pulled onto barges at Bellport, L. I., for a 30-mile water trip to Massapequa, L. I., on Great South Bay. Below, the 60-ton "Martha-Mary" chapel, originally built by Henry Ford at Macon, Mich., is enroute by truck to Trenton, Mich.—82 miles away—to replace a burned-out chapel.*

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Calif. bridge board approves two plans for new San Francisco Bay crossing

Structure paralleling present bridge and a causeway-tube crossing both favored in move to end controversy.

In a surprise move to settle controversies over which of two recommended San Francisco Bay crossings should be built, the California Toll Bridge Authority last week approved both for construction as soon as possible.

Under dispute was a bridge previously recommended by the authority, (*ENR* Feb. 27, vol. p. 345) running parallel to, and about 200 ft. north of the present structure and a causeway-tube crossing advocated by an Army-Navy board report. (*ENR* Feb. 13. vol. p. 237)

In approving the construction of both crossings in the near future, the authority acted on advice from state department of public works. Studies by the department have revealed that two crossings will have to be built to meet immediate traffic needs.

Delays were threatened in start of the project when various civic factions around the bay aligned themselves behind one or the other of the suggested crossings. It had been feared that these opposing groups would consume valuable time in agreeing on a location and that the state would not act until long and tedious public hearings had been held.

Only question yet to be answered is which of the crossings is to receive priority over the other. Public Works Director Charles Purcell said they could be constructed at the same time, but he recommended to Gov. Earl Warren, chairman of the authority, that a priority be placed on one of them. Purcell said this decision could not be made until further engineering studies are made.

Cost $239 million

Total cost for both crossings is now estimated at $239,468,000, based on the state's figure of $105,000,000 for the parallel bridge and the Army-Navy board's estimate of $134,468,000 for the southern crossing. These figures include only the immediate approaches for both structures.

By establishing the two crossings as public necessities the authority eliminated another problem that had arisen a week before. Foundations for a $1,000,000 building had been started on the site needed for the western anchor of the parallel bridge and permission for taking test drillings on the property had been refused state engineers.

Owner of the project, a sailor's union, continued work on the project. Spokesmen for the union pointed out that the state had no legal right to stop the work as long as the Army-Navy board's causeway-tube might still be chosen for the crossing. Contractors for the union said they had a contractural obligation to perform.

Two days after the Toll Bridge Authority announced that both crossings were needed and would be built, attorneys for the states filed a condemnation suit in a San Francisco superior court.

Ask bids for Dec. 12 on Calcasieu River bridge

Bids for the substructure and west approach for the Calcasieu River highway bridge at Lake Charles, La., will be received by the state highway department Dec. 12, Director R. B. Richardson has announced.

The bridge, a link in U. S. Highway No. 90, will have no movable spans, but will have a 131-ft. clearance to provide adequate passage for any expected water traffic on the Calcasieu above Lake Charles.

Richardson said the project, estimated to cost more than $3,000,000, has been approved by the federal Public Roads Administration as to plans, specifications and cost estimates.

Ohio becomes 20th state to safeguard road funds

Ohio voters at recent elections overwhelmingly approved a constitutional amendment barring diversion of highway-user taxes to other than road use, making their state the 20th to adopt such a law.

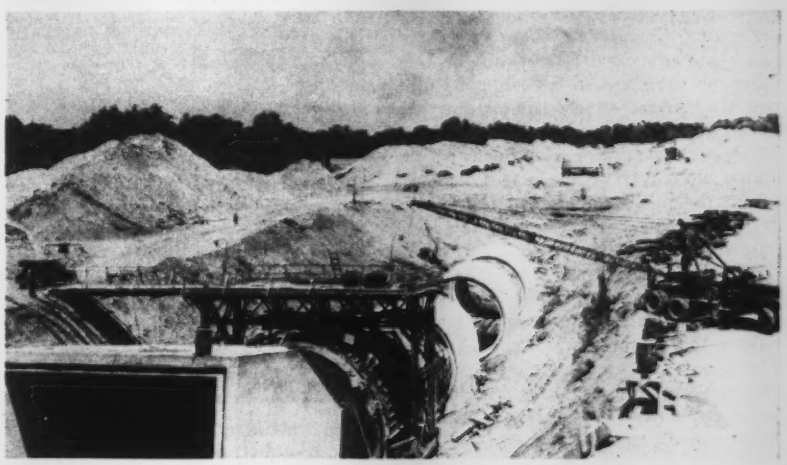
The new law will go into effect Jan. 1. 1948. At least two other states—Massachusetts and Tennessee—vote on full anti-diversion amendments next year.

A special session of the Ohio Legislature in December seems probable because appropriations were made in anticipation of liquid-fuel tax revenues going into the general fund. The 3-cent gasoline tax which produces about $45,000,000 a year in revenues, the 1-cent liquid fuel tax of about $15,000,000 a year, and the automobile license fees of about $28,000,000 a year now must be used for street and highway purposes only.

Funds already earmarked

The gasoline tax and automobile license fees already are earmarked by the Legislature for highways, but since 1939, the $15,000,000 from the liquid fuel tax has gone into the general revenue fund.

The legislature already has appropriated to the highway department its funds for 1947 and 1948. In view of the constitutional amendment, however. the department will get an extra $15,000,000 from the liquid fuel tax, and the general fund will be deprived of that amount, observers said.



Siphon for Friant—While the Kings River is diverted, this 3,215-ft. siphon is being built as part of the Friant-Kern canal in California's Central Valley Project. The 24-ft.-dia. conduit, seen here from open end of a rectangular transition for a bridge crossing, will eventually lie 5 ft. below the river bed. Morrison-Knudsen Co. and M. H. Hasler are joint contractors on the canal section that includes the siphon.

DEVELOPMENTS BEYOND U. S. BORDERS

Digested from reports by Engineering News-Record correspondents and the McGraw-Hill World News Bureau

Rio de Janeiro to remove 67-acre hill—Huge power project in Colombia nears completion—Plan new airport at Bangkok—Mexicans plan $75 million port project—Other foreign news

Brazil—Facing rapidly increasing traffic congestion, officials of Rio de Janeiro have finally decided to remove bodily a 67-acre hill in the heart of the city to relieve vehicular traffic pressure.

The hill to be removed is the Morro de Santo Antonio (Saint Antonio Hill)—an eminence which is 210 ft. high at its highest point and whose base covers an area of about 67 acres. The job will involve removal of more than 5,000,000 cu. yd. of material, about 80 percent of which is estimated to be earth and about 20 percent rock. Removal of the hill will permit construction of a diagonal street connecting the northern area of the city directly with the shoreline and the main highway to the southern suburbs of Copacabana.

Although no date has been set for calling bids on demolition of the hill, a special department has been created in the city government, known as Servico Technico Especial de Morro de Santo Antonio. Located at Avenida Marechal Camara 350, the special section is headed by Eduardo Souza, Jr. The city government is interested in receiving proposals from any firm—American or other—interested in tackling the task.

City officials said that waste matter from the hill will be dumped into the bay along the city's shoreline to permit widening of existing shore highways, and the diagonal street to be cut through the site will relieve congestion on the narrow streets surrounding the hill. Demolition of the hill will also include some slum clearance in the area. Removal of the waste material from the hill—two blocks west of the city's famous Avenida Branco—will pose some special problems, Mr. Souza said. City officials have specified that the removal operation shall not interfere with the already congested traffic along the shore front. Removal, therefore, may involve the construction of tunnels under the existing highways or of overhead tramways. It was indicated that tunnels may be constructed, since future plans call for an underground vehicular tunnel below a number of streets in the neighborhood.

Dumping of material into the bay will result in a fill about 9,840 ft. wide along the Avenida Beira Mar diminishing to about 3,280 ft. as it is continued to the southward.

Power . . .

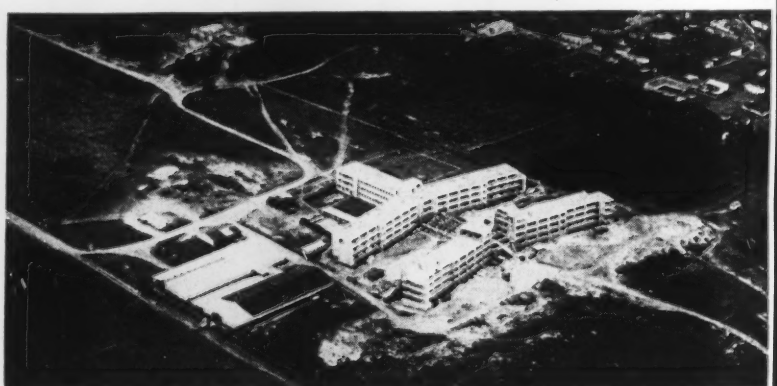
Colombia—The Rio Grande project, designed to supply 250,000 kw. to the desperately power-short Medellin industrial area of Colombia, is in the last stages of construction on the first phase of the program. This will be a power-house to generate 50,000 kw.

The first phase of the project includes a small diversion dam of the spillway type, built of cyclopean concrete, to a height of some 15 ft. After passing through a desilting basin, the water is sent through a diversion channel which consists of an old bed of the river that fortunately was located for nearly a mile in the direction of desired flow. At the end of a short diversion canal an 18-ft. diameter tunnel has been cut for about 500 meters through hard rock, and then the water is taken across the main stream of the Rio Grande in a closed aqueduct to a second tunnel 1,700 meters long. Beyond these two tunnels a main reservoir will be formed by erecting a rock-fill dam across the mouth of a natural basin. The drop from the diversion point to the power-house will be about 900 ft.

The project, planned in four stages (the remaining three to include construction of additional dams and power stations) is being financed with a $4,000,000 loan obtained from the U. S. Export-Import Bank. H. S. Foley, an American electrical engineer who has been a resident of Colombia for about 20 years, holds a contract to supply all equipment and material for the project. Charles V. Foulds, consulting engineer on the project for the local power company, the Empresa de Energia Electrica, is supervising construction.

India—American contractors are now being invited by the India Supply Mission to submit their qualifications for bidding on construction of the huge reinforced - concrete Ramapadasagar Dam on the Godavari River in Madras Presidency in India. This structure will have a maximum height of 428 ft. and a crest length of 6,600 ft. It will require about 500,000 cu. yd. of rock excavation and 20 million cu. yd. of other excavation. Contents of the dam, which will create a reservoir covering 527 sq. mi., will total 8 million cu. yd. and in excavating to rock for the structure as much as 200 ft. of material may need to be removed at some locations.

The project is planned for power de-



***Guatemalan Hospital**—Designed to serve as a hospital center for the entire country, the $2,651,000 Hospital Roosevelt is now nearing completion at Guatemala City. Of reinforced concrete designed to resist earthquakes, the establishment will include a nurses' school and home (at upper left), kitchens, warehouses and shops. Design and construction are being supervised by the staff of the Institute of Inter-American Affairs, for whom Samuel T. Drew is chief engineer and H. W. Kolbe, J. T. Howell and E. J. Whiting are consultant, superintendent of construction, and architect.*

velopment and other major benefits and six 33,000-kw. turbines will be installed. Between 8 and 9 years is expected to be required to complete the project with construction methods to require protection against high flood discharges, the maximum possible flood being estimated at about 3,000,000 cfs. Contracting firms wishing to bid on the dam, with reference to detailed plans and specifications to be supplied later, should furnish in triplicate to the India Supply Mission, 635 F Street, N. W., Washington 4, D. C., a certified statement of their qualifications before Dec. 15, 1947. Four alternate forms of contracts are being considered.

New Zealand—A decision to erect one of the largest hydro-electric plants in the British Commonwealth was recently announced by the New Zealand government. The project, to cost about $50,000,000, will generate 320,000 kv. Government sources said that the project would be located in Central Otage. A town to accommodate 4,000 workers is being planned prior to the construction work.

India—The government of Southern Bombay Province is now going forward with a survey of the Kalindi River where studies indicate that up to 340,000 kw. could be generated at the foot of the west coast mountain range.

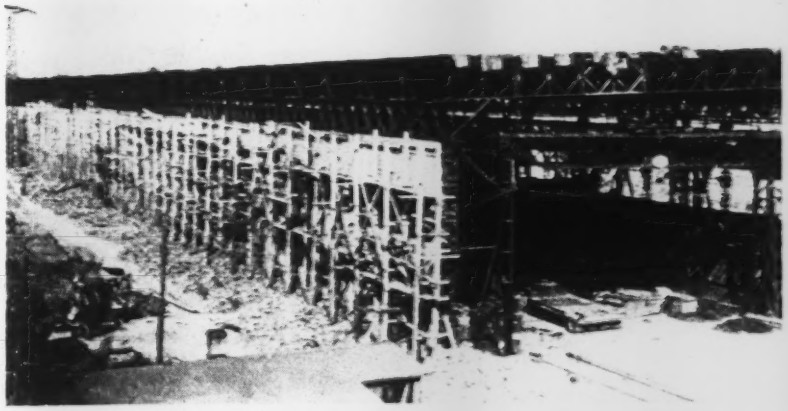
Mexico—Mexico and the U. S. Export-Import Bank have announced the approval of a credit of $3,500,000 to Nacional Financiera, S. A., a financial agency of the Mexican government. Proceeds are to be used to finance purchases in the United States of materials, equipment, and services to complete a new 54,400 kw. hydro-electric station at Guadalajara and adjacent territory in central Mexico.

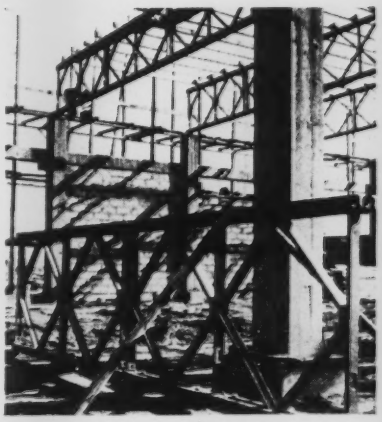
Transport . . .

Siam—The Siamese Ministry of Communication has announced that it is considering an offer by the Far East Airport Co.—a U. S. firm—to build a $10,000,000 commercial airport at Bangkok.

The same company also is bidding on a contract for repair of the runways of Don Muang Airport which are now in use—about a $6,000,000 job. The firm has asked for special concessions in the collection of landing fees and other matters in return for its work.

The Far Eastern Airport Co. is represented in Siam by Clark M. Kee, a specialist in airport construction and former airport engineer for American Airlines and Pan American Airways.





Buildings of Bailey Bridging—U. S. Army Engineers of the European Command are making profitable use of surplus Bailey bridge trusses in buildings at their two main depots in Germany. At Giessen, the buildings have a concrete frame two bays wide, with the Bailey units used as 50-ft.-span roof trusses linked together over the center line of columns in such a way as to provide a 1:20 slope both ways toward the eaves. At Hanaux—the biggest Engineer depot—single-span buildings are used. Latticed steel columns are topped with a longitudinal Bailey truss which supports the 100-ft transverse trusses of the roof. Independently supported overhead cranes are used in these buildings.

India—Madras Province has received a grant of $7,500,000 under the national highway plan (*ENR*, Aug. 28, vol. p. 288) by which the central government has accepted responsibility for development of a national road network. Of the total, $4,500,000 will be spent for construction of bridges at many points which are now served either by fords or lightweight structures—and $3,000,000 for maintenance.

Argentina—A new rail line to unite northern Argentina and Chile is expected to be completed next February. According to plan the last rail in the system will be placed Feb. 20. Known as the International Argentina-Chilean Railway, the road will consist of a 550-mile section, some 200 miles in Chile and 350 miles in Argentina.

Mexico—The government-operated National Railways of Mexico have been authorized to establish a grand central freight depot in Mexico City.

Venezuela—The Iron Mines Co. of Venezuela and the Oliver Iron Mining Co. are said to be preparing construction of new railroad lines in Guayana to provide more economical outlets for ore products in the area.

Ports and Harbors . . .

Mexico—Although the Mexican government's 1947 budget allowance for port work is exhausted, continuance of the projects for the rest of this year is assured by a presidential decree ordering an appropriation of $825,000.

Works in progress include dredging, and building wharves, breakwaters and warehouses at the gulf ports of Tampico, Tuxpan and Frontera; and the Pacific coast ports of Mazatlan, Manzanillo and Salina Cruz.

Work on the naval base at the port of Vera Cruz has been suspended, but a new contract is expected to be completed by early in 1948.

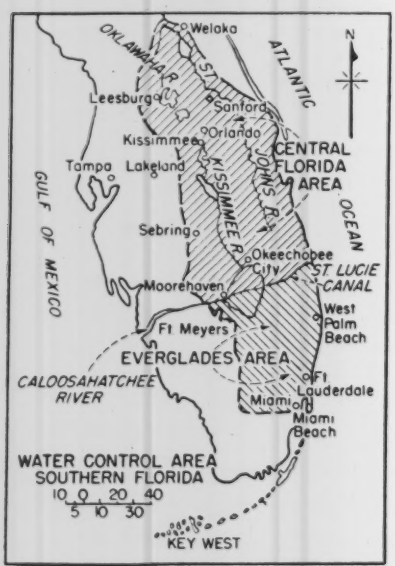
Meanwhile, a group of business executives, led by General A. L. Rodriquez, governor of Sonora State and ex-president of Mexico, has advanced a plan for the construction of a $75,000,000 port at Tobari, Sonora.

The town is located between the mouths of the Yaqui and Mayor rivers. According to a report in the newspaper "Excelsior," most of the $75,000,000 cost will be raised from private capital. The port would tap the only region in Mexico that has anthracite coal in any quantity and would also serve large agricultural areas.

Army engineers prepare new Florida flood works

Spurred by recent storms and their resultant floods (*ENR* Oct. 23, vol. p. 568) Army engineers are preparing a comprehensive plan for flood control in central and southern Florida. it was announced last week.

Col. Willis E. Teale, district engineer at Jacksonville, said the plans include remedial measures for the Everglades area, Lake Okeechobee and its tributaries, and the lower east coast of the peninsula, as well as the central Florida area within the Kissimee and upper St. John's River basins. The entire area is to be treated as a single watershed, taking in the territory from above Welaka to Miami Beach.



When completed, the plans will be submitted to the Washington headquarters of the Corps of Engineers, probably some time in January, Col. Teale added.

Inclusion of the central Florida area in the Army's new flood control studies will not delay presentation to Congress of the current Everglades Plan, the officer said. This plan, looking to protection of 1,000 sq.mi. of rich farmland immediately south of Lake Okeechobee and protection of coastal cities from flood waters from the Everglades, has long been under study.

It envisages huge levees extending from West Palm Beach southward to a point below Miami. This protective levee would follow the line of an existing barrier about 10 miles from the coastline from the West Palm Beach Canal to below Delray Beach, and would then turn westward to a point 15 miles inland, then southward again to near Ft. Lauderdale.

Oregon state buildings to cost $9,000,000

Building projects at Oregon state institutions to cost approximately $9,000,000 have been approved by the state board of control and state emergency board since adjournment of the 1947 session of the state legislature. Contracts totaling $6,400,000 already have been awarded and others costing more than $2,000,000 will be undertaken in 1948.

Largest of the projects is at the Oregon State Hospital for the Mentally Ill at Salem, where $2,500,000 is being spent in construction and new equipment, including a treatment hospital, three ward buildings and a nurses' dormitory.

Other projects include a cell block at the state penitentiary, an admission hospital at the Eastern Oregon State Hospital and new cottages at the Fairview Home and State Training School for Boys.

Major items in next year's construction program include expenditures of $768,000 for a new school building and gymnasium at Hillcrest School for Girls; $300,000 for a primary school building and dormitory at the State School for the Deaf, and $225,000 for a dormitory at the State Tuberculosis Hospital at The Dalles.

Asphalt-asbestos metal questioned as fire risk

As a result of a recent fire at the plant of the Gary Screw & Bolt Co., Gary, Ind., fire underwriters have reported concern about the fire hazard connected with asphalt-asbestos protected metal. The fire at the Gary plant resulted in a loss of about $400,000.

Used as roofing because of its high corrosion resistance, asbestos-protected metal of the usual type consists of corrugated sheet steel covered on each side with a protecting layer of asphalt-impregnated asbestos felt, embedded in a primary coating of asphalt and covered with an outer weatherproof asphalt coating.

According to a report in "The National Underwriter," the Gary Screw & Bolt plant had walls and roof constructed mainly of asphalt-asbestos protected metal. The publication said that fire probably originated in an electrical short circuit in an overhead crane, and spread rapidly beneath the roof, assisted by a linty, oily deposit resulting from oil-furnace discharge. Three 40-ft. bays extending the 300 ft. length of the building were damaged, necessitating replacement of all sheathing, many purlins and some trusses.

It was also reported that as the asphalt-asbestos metal took fire, there was a festooning of large burning sheets, which dropped loose and ignited combustible contents of the building.

Some of the concern of the underwriters about this fire hazard was expressed in Bulletin No. 247 issued June 15, 1947, by the National Board of Fire Underwriters at 85 John St., New York 7, N. Y. This paper points out that numerous fires have shown that the asphalt coatings will burn and fire will spread along the surface whenever it is exposed to sufficient heat from any source sufficient to raise a considerable area to the ignition temperature. However, it is pointed out that one make of asphalt-protected metal of a new type in which asphalt-impregnated felt is fastened to the metal with metallic adhesive instead of with asphalt, has recently been classified by Underwriters' Laboratories, Inc., as "considerably less of a fire hazard" than other materials in this class.

IDLE MONEY USED FOR PLANNING

Hawaii's territorial government is putting idle money at work to speed public improvement projects. Money is being loaned interest free from the territorial general fund to draw the plans for projects which eventually will be financed by bond issues.

The loans permit the various departments to have everything ready for work to start when the bond money is actually raised, the loans then to be repaid.

The plan was worked out by Walter D. Ackerman, territorial treasurer, with the approval of Gov. Ingram M. Stainback.

Louisiana to spend $3 million on colleges

The Louisiana state board of education has authorized calling for bids on more than $3,300,000 worth of construction at state colleges and special-purpose schools.

The projects form a major part of a $4,500,000 building program for the schools authorized by the legislature in a special session this year.

Largest single item on the program is a combination dormitory and administration building at the State School for the Deaf, to cost $600,000. Other major items include $552,000 for a girls' dormitory at Louisiana Polytechnic Institute; and similar dormitories at the Southeastern Louisiana College and at Southern University.

New rockfill, new track built "between trains"

Without interrupting schedules over its main line near Granite Bend, Mo., the Missouri Pacific Railroad recently put in a 200-ft.-long, 8-ft.-deep rockfill, laid 300 ft. of track and connected the new section to the old track in exactly four hours.

The relocation project—part of an extensive rectification and stabilization program being pushed to prepare the way for newer, faster and heavier diesel-powered trains—is located about 145 miles south of St. Louis, Mo., on the banks of the Black River.

Preliminary steps included the construction of a new rock cut through monolithic granite, and a fill in the old bed of the river, nearby.

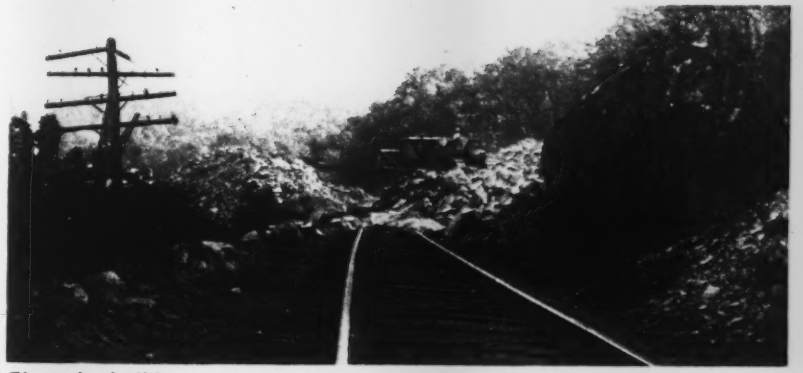
Wait for trains

When this was completed, railroad engineers waited until northbound passenger train No. 26 passed over the old track at 8 a. m. one October morning. Then the track was immediately cut, and bulldozers started pushing granite fill over the old bed, to build a new rockfill of about 450 cu. yd., eight feet high and 200 ft. long. This fill, connecting the rock cut and the river-bed fill brings the new track to a level well above any flood crests on the Black River.

Following closely as the bulldozers packed the new fill, a locomotive crane lifted 39-ft. prefabricated track sections into place for fastening by work crews. The track sections consisted of two 112-lb. rails, laid on steel tie-plates and fastened to creosoted ties.

At 11:30 a. m., the last prefabricated section had been swung into place—more than a half-hour ahead of schedule—and track gangs were busy making final connections.

And at 12:05 p. m.—operating exactly on schedule—Train No. 3, the southbound "Ozarker" puffed over the new track and through the cut to inaugurate the new line.



***First** the bulldozers start to push rock-fill over the old main track, as the Missouri Pacific Railroad begins to rectify a curve in its track.*

***Then** the granite fill is packed down by the machines. Old main track can be seen curving under fill at the center of photo.*

***Closely following** are the track-layers, who line up and tamp the 39-ft. prefabricated track sections that are swung into place by a crane that advances as the track is completed.*

***And here comes No. 3,** just four hours later, making its run on schedule over the new track section.*

HIGHLIGHTS OF MUNICIPAL DEVELOPMENTS

Summarizing current activities in city engineering and construction throughout the country.

San Francisco, Chicago approve major construction bond issues—Propose $15 million civic center for Pittsburgh—Expressway plans advance—Other municipal affairs

At the November elections voters of many municipalities took action on bond issues for public works of various classifications. Most of the results were favorable. Among the larger programs were:

Voters of San Francisco, Calif., approved $87,050,000 worth of bonds, with the funds earmarked for transportation, traffic, water, street, and recreation needs.

The city's retiring mayor, Roger Lapham, said he was taking all possible preliminary steps to make the money available by January, and Public Utilities Manager James H. Turner emphasized that engineering work on most of the projects is so far advanced that as soon as money is available construction could get under way..

Turner pointed to the $250,000 appropriated some time ago for an engineering survey and right-of-way purchases for the additional pipe line from Hetch Hetchy Dam across the San Joaquim valley and into the city via the lower end of San Francisco Bay. The voters approved $25,000,000 for construction of this line, to increase the city's water supply by 76 mgd.

The $87,050,000 was contained in six separate ballot propositions, the largest of which was the Hetch Hetchy line. Second largest in the list was $22,850,000 for street improvements, including a $5,000,000 Broadway tunnel.

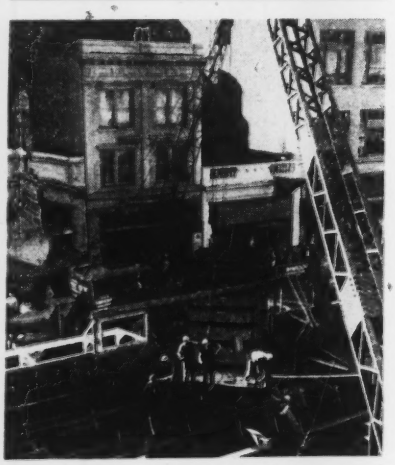
To renovate the municipal transit system, $20,000,000 will be spent to buy new rolling stock and for rehabilitation of track and facilities. Other expenditures authorized include $12,000,000 for recreational facilities; $5,000,000 for off-street parking facilities, and $8,000,000 for the proposed North Point sewage treatment plant.

Chicago, Ill., approved $30,000,000 in housing bonds, of which $15,000,000 in one issue is to be used for assembly and clearing of sites which will be sold to large investors for housing construction. A similar amount in a second issue is to be used by the housing authority to relocate families dispossessed in the land clearing. For that work there is also about $10,000,000 from a state-aid fund created by the 1947 legislature.

Public housing must first be erected by the housing authority to take care of tenants removed from buildings. This will be financed from the $15,000,000 bond issue, supplemented by about $3,300,000 from another state-aid fund.

A proposition approved in New York State will supply $135,000,000 for new loans for public housing and for authorizing additional rent subsidies.

Voters at Winston-Salem, N. C., approved the issuance of up to $4,000,000 worth of bonds for improvements to the municipal water system. Included is the extension of a line to a new water source on the Yadkin River at a cost of $2,051,000 to provide for present and future needs and prevent water shortage. Also included are a project for increasing the filtering capacity at Salem Lake at a cost of $960,000; the replacement of a wooden pipe at a cost of $290,000; and improvement of the distribution and storage systems, $805,267. Engineers estimate the cost of the improvements at $4,106,267. The city plans to pay for some of the work with funds from sources other than the bonds.



Big Girder—Traffic on O'Farrell Street, San Francisco, is blocked as a 62 x 10-ft., 28-ton steel girder is swung off trucks to the site of a new R. H. Macy Co. store. The girder will take the load of one column at the second floor level to provide added clear span for ground floor sales area. Part of a $6,500,000 modernization and expansion program, the eight-floor addition is being built by Dinwiddie Construction Co., with Bethlehem Pacific Coast Steel Corp. as subcontractor for steel erection. W. P. Day and Associates, San Francisco, are architect-engineers.

Voters of Fort Wayne, Ind., decided against the proposed $27,000,000 Anthony Wayne Parkway, a super highway-system through the city. Heaviest opposition came from the sections of the city through which the highway system would pass. The opposition made good use of the fear of homeowners that they would be permanently displaced from their homes with no place to go.

Other election action on bond issues included the following:

Boonville, Mo., approved $150,000 for sewage system extension; Caruthersville, Mo., OK'd $575,000 to improve waterworks and sewage and to build a 400,000-gal. storage tank; St. Joseph, Mo., defeated a proposed $1,250,000 bond issue to finance construction of a war memorial building.

Plan "Pittsburgh Center"

A grandiose plan for a "Pittsburgh Center" to cost an initial $15,000,000 has been presented to the Chamber of Commerce of Pittsburgh, Pa., by the city's Regional Planning Association. Mitchell & Ritchey, site planners and architects for the vast redevelopment project, said the "Center" would be the principal structure in a redeveloped 70-acre area on a hill above the well-known Golden Triangle business section.

The project if carried out would eliminate one of Pittsburgh's worst slums, providing new housing accommodations for 2,000 persons. It would also give the city much needed sports, cultural, hotel and commercial facilities.

Included in the plans are: A sports arena—convention hall to seat 18,000; a convention exhibit wing; space for permanent industrial exhibits; a 1,500-seat legitimate theatre; a large restaurant; a helicopter landing field; and a plaza for outdoor exhibitions, popular concerts and pageants, with pools for ice skating and water displays.

There would also be ample parking facilities, a grade school, nursery school, playgrounds, and a community center.

Wide one-way avenues would loop around the main structure. The new

crosstown traffic artery would connect with the center.

Expressway, traffic plans

Many cities last week advanced their plans for expressway and express street construction while others announced varying programs for relieving traffic congestion.

Seattle, Wash., received a recommendation from the Washington State Department of Highways and its own engineering department urging construction of two expressways extending north and south through the center of the city connected by five east-west routes. No cost estimates were prepared, but the work is expected to require more than $30,000,000. One of the crosstown connections would necessitate a tunnel through Beacon Hill in the south end of the city.

Louisville, Ky., seeking a route for a freeway along Frankfort Ave., advanced further its plans to remove the Frankfort Ave. tracks of the Louisville & Nashville Railroad to eliminate dangerous grade crossings and make possible construction of an express street. Complete removal of the tracks would eliminate the need for a $9,000,000 grade crossing elimination program on Frankfort Ave.

At Baltimore, Md., the City Plan Commission approved a revised program for street construction and extension to connect with a proposed crosstown expressway. The commission's action, however, did not establish a priority schedule for construction.

Other traffic-easing plans announced during the week included the announcement that the Richmond, Va., Parking Authority was ready to hire engineers to begin planning the solution of many traffic problems and to establish a Bureau of Traffic Engineering in the city's Public Safety Department.

In New York City, 26 citizens, headed by Walter D. Binger, a civil engineer and formerly commissioner of borough works for Manhattan, formed a committee dedicated to focus official responsibility for the present traffic bottlenecks, make recommendations for solving the problem and "waste no more time in investigations."

Illinois airport

The $2,700,000 Capital Airport at Springfield, Ill., was dedicated recently as the first to be built and opened for operation under the 1945 state law that created the Illinois Airport Authority. The 972-acre field is located four miles northwest of downtown Springfield, and provides three 5,300 ft. runways.

Allis-Chalmers photo

***Working on the Levee**—Work on the $18,000,000 levee at Louisville, Ky., is now characterized as a race between early winter rains and fast earth-moving equipment. More than 1,000,000 cu. yd. of earth will be moved to build a wall over 20 ft. high in some sections. Terry and Steadman, Bay City, Mich., hold the contract on the section visible here under supervision of Army engineers.*

At Moline, Ill., city councilmen prepared legal steps for turning over the municipal airport to a Metropolitan Airport Authority, after agreement that the city would be paid $75,000 in cash and that the authority would take over $133,000 in outstanding bonds.

Utah orders cleanup

Unless Salt Lake City, Utah, meets newly-adopted state board of health structural and sanitation requirements, seven municipal swimming pools will be closed next summer.

The new regulations, patterned after U. S. Public Health Service standards, require that each pool be equipped with a filter plant, purification unit, chlorinator, overflow gutters and water intake from all sides. City officials estimated that the cost of meeting the structural requirements would be about $148,000 for the seven pools.

All pool operators in the state have been advised to meet the new requirements or close up.

New planning posts

Five new positions are to be created for the Philadelphia, Pa., City Planning Commission.

The positions, to be filled by competitive examinations under civil service, are: senior site planner, $5,000 to $5,600; assistant site planner, $3,900 to $4,400; junior site planner, $3,300 to $3,800; junior planning analyst, $3,300 to $3,800; and librarian, $3,000 to $3,500.

Minneapolis housing body

Under powers granted by the 1947 state legislature, Mayor Hubert Humphrey of Minneapolis, Minn., last week named a 5-man municipal housing commission. The group is empowered to float bonds, clear blighted areas for sale of land to private firms for housing development and to conduct a limited amount of "public housing", subject to approval in a referendum from the city's voters on each 1,000 units proposed.

Members include C. E. Spring, president of the Minneapolis Board of Realtors; John F. McCall, chairman of the Minneapolis Building and Construction Trades Council; S. L. Stolte, a civil engineer and past president of the Minnesota Association of Professional Engineers.

Omaha workers seek raise

Omaha, Neb., city employees want an immediate emergency pay increase of $25 per month for salaried workers and 15 cents an hour more for hourly workers.

The group, represented by a committee of Local 251, American Federation of State, County and Municipal Employees, said they would seek an amendment to the civil service laws giving the civil service director complete power over non-elected employees.

Representatives pointed out that the average pay for city employees has increased by less than 15 percent in the past year.

Veterans Administration to inspect GI housing while under construction

New plan put into effect in effort to insure improvement in quality of homes provided

In a move to improve the quality of veterans' housing, the Veterans Administration has inaugurated a new plan for inspection of the houses while under construction.

Inaugurating the new service, VA for the first time assumes directly the function of assuring proper construction—from planning to completion—of houses built for sale with GI loan financing. VA made it clear that it is not accepting this responsibility lightly, stressing in its instructions to the field offices that the "procedure carries with it grave implications."

The plan provides for a pre-construction appraisal of "reasonable value" for GI loan purposes, based upon complete plans and specifications, and for a minimum of three interim inspections as the work advances, to assure adherence to the standards agreed upon.

Applicable to new home developments of five or more family units, the new procedure is designed to insure completion in accordance with plans and specifications. The plan is optionally available to builders, lenders and sponsors of such projects.

The great advantage to builders and those financing these housing developments will be the fact that they receive a definite commitment as to "reasonable value" in advance of construction. The commitment will remain valid for a specified period—usually predicated upon the probable length of time necessary to complete construction.

Heretofore, such a definite VA commitment as to the maximum price for which the house could be sold was available only where an individual veteran applied for a construction loan.

Another feature of the new procedure is a more equitable system of assessment and payment of fees for the services of the appraisers and inspectors assigned by VA.

The appraisals will be made, as in the past, by a committee of VA-designated appraisers—two or more, depending upon the number of units in the project. However, the appraisal fee will be paid by the builder, lender or sponsor of the development and may not be charged to subsequent veteran-purchasers of homes in the project.

Provision is made for temporary continuation of previous VA regulations in the case of projects where construction has already started.

Thereafter, VA officials said, definite certificates of reasonable value for GI loan purposes will be issued in connection with such housing developments only where the VA system of appraisal and inspection is agreed upon before construction starts.

VA inspections will not be required in connection with work supervised by the Federal Housing Administration.

Release building code for small jurisdictions

The Uniform Building Code Association—national affiliate of the Pacific Coast Building Officials Conference—has announced release of a new "Uniform Building Code for Small Jurisdictions", for use in smaller communities.

The new code is an abbreviated form of the basic "Uniform Building Code" and is designed for jurisdictions of under 10,000 population, and to apply only to buildings not over 7,500 sq. ft. in ground floor area.

The 1949 edition of the Uniform Building Code, accompanied by a new edition of the small code, will be released March 1, 1949. Comments and criticism are now being received at the organization's headquarters, 124 West 4th Street, Los Angeles 13, Calif.

Better registration law sought in North Carolina

C. L. Mann, of Raleigh, executive secretary of the North Carolina State Board of Registration for Engineers and Land Surveyors, told a state legislative committee recently that the board would like to have requirements changed in order to conform more nearly with standards of other states and thus aid in reciprocity.

He said that under the existing law, for example, no one is prohibited from engaging in land surveying.

AISC head scores low worker efficiency

Until production by the individual worker reaches normal figures, increasing costs in the building industry will continue, T. R. Mullen, president of the American Institute of Steel Construction, warned members of the organization last week.

The occasion was the 4-day 25th annual meeting of the organization, held at Miami Beach, Fla.

"The solution of spiraling costs is not in sight," Mr. Mullen said in his annual report. "Productivity in the building trades is down nearly 50 percent from four years ago, and although it is gradually coming up, bricklayers, for example, are not yet laying 800 to 1000 bricks a day and iron workers are still not delivering 400 to 500 rivets on normal driving."

Sharply scoring restrictive labor practices that increase prices, Mr. Mullen commented that workmen in the shops continue to stroll away from their machines before the shift ends, and two men are often required where only one is needed in many places.

"Featherbedding in our industry must be stopped," he added.

"We had hoped that labor costs would be stabilized this year, but the upward spiral continues. For example, many building trades in New York City received $2.50 an hour last January. Three or four months later, the bricklayers demanded and got $2.75 an hour. Now the plasterers are getting $3 an hour for a 6-hour day, and the iron workers are demanding an increase or a guaranteed wage."

Sees need for more workers

Discussing prospects for the future, Douglas Whitlock, chairman of the Building Products Institute, predicted that about 200,000 additional workers will be needed in the construction industry in 1948 to permit an anticipated increase of about $1,500,000,000 in the volume of new construction. He pointed out that the expansion of highway and heavy engineering construction will not require skills ordinarily used in residential and other building and thus will not detract from the housing program.

Murray Shields, vicepresident and economist of the Bank of the Manhattan Company, of New York City, told the group that in his opinion the United States faces no long depression or great deflation, but "a brief economic setback" when the forces making for the present boom-like conditions in industry have finally spent themselves.

Mr. Shields pointed out as weaknesses in the present economic situation the low efficiency of labor, and the tightening in the supply of funds for new capital expansion.

Housing investigators hear charges of monopoly in N.Y.C. construction

Subcommittee of House told that contractors and unions combine to maintain prices, dictate materials used

Charges of a contractor-labor monopoly so powerful that it can force recalcitrants out of the construction industry and fix prices and types of materials used in housing in the New York Metropolitan areas have been made before a Congressional group.

The accusation against the New York construction group, along with other more general charges of price-fixing at the dealer level and exhorbitant labor costs were made to members of the Gwinn committee, which held one of a series of hearings in the nation's largest city last week.

The committee is one of two Congressional groups now probing the housing situation in the United States preparatory to possible legislation at the next regular session (*ENR* Oct. 23, vol. p. 560).

In a documented statement, Walter Gordon Merritt—an attorney who has previously represented manufacturers of building supplies in a series of controversies with New York unions, but who said he was appearing as a private citizen—told committeemen that the "monopoly" included an "iron curtain" of fear that effectively sealed the lips of contractors and workmen in discussions of the existence of any combine.

"Nevertheless," he continued, "there exists in the city of New York a combination of building trades unions and building trades contractors, operating through a central agency, which controls . . . the construction industry. It is a monopoly. Such competition as exists between members is subject to self-imposed . . . rules that inflict artificial costs and wasteful practices on the public.

"Persistent opposition . . . spells commercial suicide for contractors and journeymen."

Backing up his statement, he referred to a recent lawsuit in which a special master had found evidence of the existence of such a monopoly, and of other restrictive practices, including the restriction of membership to fathers and sons of union men.

Ending three days of testimony, Rep. Ralph W. Gwinn of New York, chairman of the subcommittee, issued a statement in apparent support of Mr. Merritt's charge.

He said that his group's investigations had shown that "there seems to be a monopoly" in the city, and warned that if at the end of hearings to be held later in Washington there is evidence of conspiracy he will recommend action by the Department of Justice.

Labor representatives denied the lawyer's charges.

Score middlemen

Other testimony presented to the congressmen included a statement by William Levitt, head of the firm of Levitt and Sons which is mass-producing housing in suburban areas, who charged that middlemen's markups on construction materials have increased prices on $5,000 houses by as much as $2,500.

He said that houses which his company is now building for sale at about $7,500 could be sold for $5,000, except for the fact that the company must buy all its materials at "what amounts to retail prices for wholesale lots."

"We buy by the carload," he said, "but we have to pay the dealer, who pays the distributor, who pays the manufacturer. Recently—by accident—we discovered that a dealer-distributor was making a profit of 53 percent. He had actually contributed nothing to the transaction. When we found this out, we 'blew up.'"

Other testimony included that of a small independent crane contractor who declared he was threatened with bodily injury by union representatives when he complained about incompetent help.

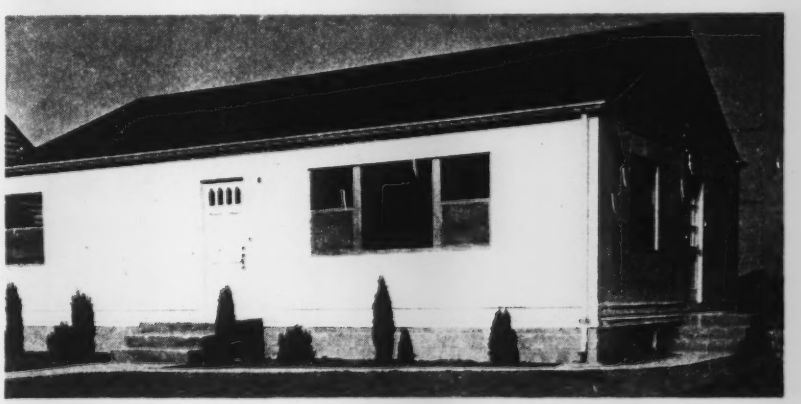
Paving record is set for North Carolina

On a project completed early in October, a record was established for the maximum square yardage of portland cement concrete highway built in North Carolina by one crew in a single day, for one week's work, and during the month, according to W. Vance Baise chief engineer of the North Carolina State Highway and Public Works Commission. A record was also set on the same job for the maximum payment earned by a highway contractor on one job during one month.

Rea Construction Co., Charlotte, N. C. was the contractor and the 13-mile project was located on U. S. Route 74 between the towns of Wadesboro and Monroe. An 8-in. non-reinforced slab 22 ft. wide with a longituninal tie-bar joint and transverse contraction joints on 30-ft. centers but without expansion joints was built, dowels being used at the transverse joints.

The lanes were paved simultaneously with a 34E dual-drum paver followed by a spreader, finisher, longitudinal float and a spray-curing machine. A progress of 2,300 ft. was made one 12-hour day, which is a new record for North Carolina. During four weeks over 2,000 ft. was put down daily each of the six days worked during those weeks. The poorest day's progress was 1,800 ft.

Only two months were required for the $560,000 project. In September $259,000 was earned by the contractor or the maximum by any firm on a single North Carolina highway improvement, including bridge projects, in a month. Unit cost was $2.63 per sq. yd.



***Industrial Housing**—To house workers at its plant at Bettendorf, Iowa, the Aluminum Company of America recently signed a contract with the Butler Manufacturing Co., Kansas City, Mo., for erection of 100 aluminum "Boulevard" homes. The units, to be 3-bedroom structures, 24 x 38 ft., will be erected either with radiant heat or conventional heating systems, and feature both inside and outside panels of aluminum.*

MEN AND JOBS

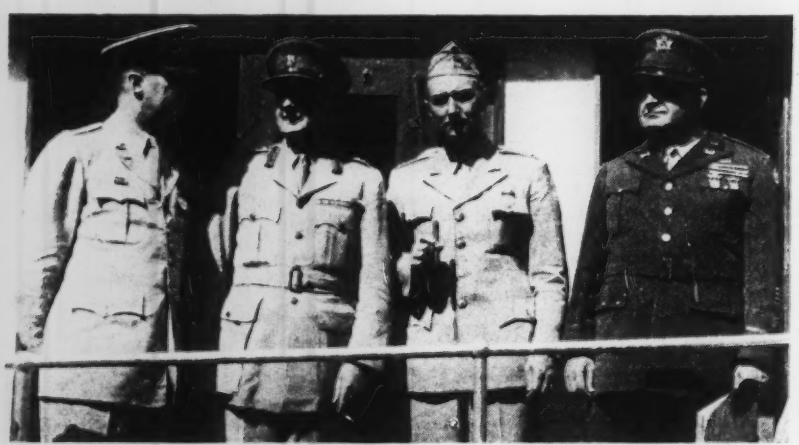
Arthur P. Miller, senior sanitary engineer in Washington, D. C. with the U. S. Public Health Service, gets set for a ringer.

Charles E. Ryder has joined the staff of Gannett, Fleming, Corddry and Carpenter, Inc., of Harrisburg, Pa., as chief of the waterworks and dam division. For many years Mr. Ryder was chief engineer and secretary of the Water & Power Resources Board of Pennsylvania. Latterly he has been in consulting work.

Raymond W. Harder resigned recently as chief inspector of harbor construction for the port of Long Beach, Calif., to become associate inspector of construction for the California Division of Architecture. Mr. Harder was previously building inspector in the Long Beach building department and also was for 15 years in the contracting business in the Los Angeles area.

Ralph E. Tarbett, sanitary engineer with the U. S. Public Health Service for many years, is now retired and is enjoying himself, as this picture, taken at a recent meeting, seems to prove.

Harold A. Kemp (left), director of sanitary engineering, District of Columbia, pays Emil A. Press, his first assistant, for the good food at a recent outing of the Washington Sanitation Conference.



Visiting Corps of Engineer installations in San Francisco Bay, Brigadier Victor C. Secombe, engineer-in-chief of the Australian Army, was photographed on deck of boat making cruise. Engineers here are Col. Dwight F. Jones, division engineer, South Pacific Division; Brig. Secombe; Col. R. C. Brown, chief control division office, Chief of Engineers; and Col. S. N. Karrick, district engineer, San Francisco. Besides visiting Army projects, Brig. Secombe's hosts took him to inspect Bureau of Reclamation canal work in California's Central Valley.

J. Wegweiser has resigned as field engineer with the Arthur A. Johnson Corp. on New York City subway reconstruction work, to join the staff of the Irvington Form and Tank Corp., at 43 Cedar Street, New York City.

F. W. Brown has resigned as city engineer of Trenton, Ont.

Robert B. Richardson has become director of highways for Louisiana, replacing **Col. P. A. Frye,** resigned. Mr. Richardson has had 26 years of service with the highway department. Since 1940 he has been construction and maintenance engineer at Baton Rouge.

Hjalmar Olstad, superintendent of the Waiahole Water Co. Ltd., and chief civil engineer for the Oahu Sugar Co. Ltd., in Hawaii, will retire Jan. 1 to be succeeded in both positions by **Halfred McKeever,** a graduate of the Massachusetts Institute of Technology, 1934.

Edwin P. Lock, district engineer of U. S. Engineers, Memphis, Tenn., has retired and is replaced by **Col. Louis H. Foote,** formerly executive officer of the Ohio River division with headquarters in Cincinnati.

William H. Meyer, Jr., has been appointed director of the photogrammetric division of Lockwood, Kessler & Bartlett, Inc., Engineers, of Brooklyn, N. Y. Mr. Meyer, a graduate of Columbia University, 1921, was formerly general manager of the eastern division of Fairchild Aerial Surveys, Inc.

Laurence J. Doyle and **Joseph R. Squeo** have been appointed to civil engineering jobs with the division of engineering and construction of Columbus, Ohio, and **Raymond W. Godley** has been named junior engineer.

Prof. T. C. Brown has been elected chairman of the North Carolina State College branch of the American Society for Engineering Education. He succeeds **Thomas D. Doody,** who resigned recently to accept a post at Purdue University.

James M. Wardle, former resident engineer at Banff, Alta., has been appointed federal member of the 3-man Rocky Mountain Forest Conservation Board with headquarters at Calgary. Previous to the reorganization of the department of mines and resources, he

was director of engineering and surveys of that department at Ottawa.

J. J. Nuckolls of Greensboro, N. C., has been appointed superintendent of water and sewer maintenance for the city of Greensboro.

John A. Parker, head of the department of city and regional planning of the University of North Carolina, Chapel Hill, N. C., has been employed to map a long-range planning program for the city of Hickory, N. C.

Howard P. Beach, Jr., former chief of the Buildings Division, Civil Aeronautics Administration, has joined the staff of Airways Engineering Consultants, Inc., 1212 Eighteenth St., N.W., Washington, D. C.

Lloyd H. Cook, senior party chief with the North Carolina State Highway Department at Henderson, N. C., has been transferred to Wilson, N. C.

Miss Grace Nelson, office cadastral engineer for the bureau of land management's public survey branch in Salt Lake City since 1938, retired Oct. 31 after 45 years of recording Utah surveys. Appointed to the old surveyor general's office in 1902, Miss Nelson started her career as a draftsman. She was appointed acting office cadastral engineer in 1932. She has been succeeded in the Salt Lake office by **George W. Johnson,** formerly a fieldman in Colorado.

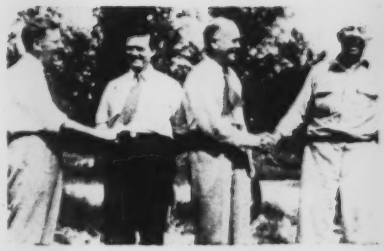
A. H. Woolverton will become chief hydraulic engineer for the Texas Board of Water Engineers, Chairman E. V. Spence has announced. Woolverton has been with the U. S. Bureau of Reclamation in Denver for the last two years. Before that he had done highway, irrigation and sanitary engineering in Dallas, Fort Worth and Wichita Falls and for the Army during the war. He is a Texas A. & M. College engineering graduate.

The Boston, Mass., engineering firm of Fay, Spofford & Thorndike recently announced the admission to partnership of three new members. They are: **Frank L. Lincoln** of Arlington, **William L. Hyland** of Norwood, graduate of Massachusetts Institute of Technology; and **Howard J. Williams** of Braintree, a civil engineer and chairman of the Braintree Planning Board.

Col. Francis H. Falkner, 42, has been appointed district engineer at Pittsburgh, Pa., it is announced by Brig. Gen. Douglas L. Weart, chief of the Ohio River division of Army Engineers. Formerly division engineer at Huntington, W. Va., he will succeed **Col. Walter E. Lorence,** who is retiring. Falkner was graduated from West Point in 1928 and saw service in the Pacific theater during the war.

D. D. Honeycutt has been named general roadmaster of the Norfolk Southern Railroad, succeeding **J. T. Phillips,** who has retired after 53 years of service. Mr. Honeycutt has been with engineering department of the railroad for 24 years and will continue to make his headquarters at offices in Norfolk, Va.

Albert Givan, consulting engineer with the Sacramento Municipal Utility district, Sacramento, Calif., retired recently after 24 years of service to the city.



Completion of 1,340,000 cu. yd. of excavation for a new 14.4-mi. channel for the Pocomoke River in southern Maryland is the occasion for celebration by these four engineers of the U. S. Soil Conservation Service. They are, left to right: D. A. Hannaman, engineer specialist at Salisbury, Md.; John G. Sutton, chief drainage engineer in the Washington office; Edward M. Davis, state conservationist, Maryland; and William S. Ott, district conservationist in charge.

Lee Roy Ballard, field engineer; M. H. "Spike" Harris, superintendent of construction, and F. C. Weiss, vice-president in charge of engineering and construction of Alabama Power Co., checks progress on their $12,000,000 electric generating plant under construction at Gadsden, Ala. Dunn Construction Co. of Birmingham has the contract for grading, excavation and concrete.

An ASCE outing at Washington, D. C., brings together, left to right, W. G. Hoyt, executive officer, Water Resources Committee, Interior Department; Carlos Sanz de Santamaria, sanitary engineer and former ambassador from Colombia to the U. S.; and Byron Bird, chief of the engineering division, Washington district office of the Army Engineers, who is explaining points of interest.

A cool ride on the deck of a Potomac River steamer is enjoyed by Percy H. Thomas (left), Federal Power Commission design engineer, and Col. H. G. Gerdes of the hospital section of the Office of Chief of Engineers.

Ernest J. Stocking, assistant chief of the examining and personnel utilization division, U. S. Civil Service Commission, studies plans of proposed Washington, D. C. improvements at an ASCE outing in the nation's capital.

RANDOM LINES *from an editor's notebook*

. . . In which a member of the western staff attends an art gallery exhibit that highlights architectural and engineering work

An art gallery may seem to be a strange place for an *ENR* editor to look for copy; but an art gallery with an exhibit showing engineering work may be considered even stranger. The San Francisco Museum of Art recently presented such a display and this West Coast editor felt in duty bound to attend. This nationally known art center is housed on the fourth floor of the Veterans Memorial Building, the sister building to San Francisco's War Memorial Opera House where the United Nations Charter was signed. A permanent exhibit is displayed and smaller exhibit halls are available for showings of shorter duration.

The exhibit of architecture and engineering was presented to show the work of Franklin, Kump and Falk, a firm which in recent years has specialized in school design but has also done much other interesting work. As the exhibit was designed for the layman and the artist, no detailed presentation of structural or mechanical design was evident. However, included in the "new trends in school design" was a vivid pictorial presentation of radiant heating for schoolrooms (*ENR* June 26, vol. p. 1020). Also presented was a description of the use of continuous windows on both sides of school buildings one room wide with long overhanging eaves on the side toward the sun.

Among the heavy industrial type buildings shown photographically at this exhibit was the new Ordnance Building at the San Francisco Naval shipyard, the outstanding feature of which was the use of glass panels in the walls and roof. Other industrial and commercial type buildings were also shown.

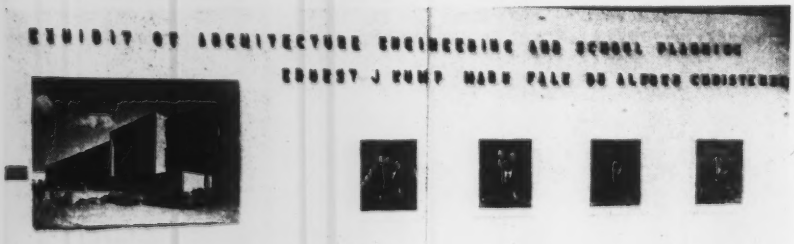
The structural engineer member of this firm, Mark Falk, is prominent in West Coast engineering circles. He recently retired from the California State Board of Registration for Civil Engineers, of which he was president for two years, and he is a director of the Structural Engineers Association of Northern California. He has been engaged in private practice in California since 1924 except for a 2-year period shortly after the Long Beach earthquake, some 15 years ago, when he was a structural engineer with the State Division of Architecture.

All things being considered, this art gallery exhibit was an unusual and effective method of publicizing the work of a firm of engineers and architects. The excellent photographs, their arrangement and their subject matter certainly were not out of harmony with their surroundings. . . *L.L.W.*

Another Ohio River bridge now toll-free

The Milton-Madison toll bridge over the Ohio River at Madison, Ind., was formally opened to toll-free traffic Nov. 1. Completed in 1929, it is the last of seven Indiana bridges spanning the Ohio River to be freed of toll charges.

Madison business leaders look forward to a residential housing boom with the freeing of the bridge from toll charges, such as the one that came about more than a year ago at Jeffersonville, Ind. It is estimated that more than 500 new homes were built in the Jeffersonville area following the lifting of tolls on the bridge, mostly by former Louisville residents who found it more convenient to live across the river from the Kentucky metropolis.



Entrance foyer to engineering art exhibit presented this display. Building on left is the Fresno, Calif., city hall.

On Oct. 30, Kentucky State Highway Commissioner J. Stephen Watkins announced the purchase for $950,000 of the central toll bridge over the Ohio River between Newport, Ky., and Cincinnati, Ohio. Financing is by bonds to be retired in nine years by toll charges of 15 cents per car. This bridge is the 20th large one acquired or built by the state since 1938. Nineteen, including the Milton-Madison bridge, are now toll-free

Advocate $186 million Florida pollution control

Citing widespread water pollution in Florida, the State Board of Health in a recent report estimated that it will take $186,000,000 to install adequate sewage and garbage disposal and water treatment plants.

David B. Lee, chief sanitary engineer, and John C. Patterson of the State Board of Health included in the report a map showing as "polluted areas" nearly every stream or bay on which there is a city to dump waste and sewage.

They included the St. Johns River from Palatka to Jacksonville, Biscayne Bay at Miami, Pensacola Bay, the Caloosahatchee River at Fort Myers, and the major parts of Tampa Bay, St. Andrews Bay at Panama City, St. Lucie Inlet and the Halifax River near Daytona Beach.

"Stream pollution abatement in Florida is of vital importance to our public water supply systems," Lee and Patterson said. "Less than one-half of our citizens have domestic water available that has been treated in any way."

"Clean Waters" film is highly commended

"Clean Waters," a 16 mm motion picture produced by the General Electric Co. in cooperation with the U. S. Public Health Service, has been selected as one of the world's six outstanding sponsored films at the International "Films of the World Festival" in Chicago.

Pointing up the dangers of water pollution and the need for adequate sewage treatment, "Clean Waters" received more first-place votes from the judging panel than any other entry.

Available for showing before any interested group, "Clean Waters" also has been purchased for permanent use by 30 state health departments and more than 40 national and local organizations.

Virginia completes first major postwar bridge

Now nearing completion west of the town of Luray on U. S. Route 211 is the first major bridge job begun as part of Virginia's postwar highway program—a structure spanning the south fork of the Shenandoah River.

Designed for an H20 loading, it provides a 28-ft. roadway and two 30-in. sidewalks.

One length of the bridge totals nearly 830 ft. The greater portion of this distance is made up of five 110-ft. plate-girder spans with each of the two end spans a continuous unit and the center or fifth span consisting of two 27-ft. cantilevers and a 56-ft. suspended section. The approach spans adjacent to the continuous units are both about 82 ft. long and each consists of a 27-ft. section cantilevered into this span and a 55-ft. steel beam section pin-connected to the cantilever. The remainder of the crossing consists of two simple beam spans each of about 55 feet.

The bridge was built by the Virginia Department of Highways for which Wm. R. Glidden is bridge engineer, T. F. Loughborough, state construction engineer, and Frank Fawcett, resident engineer. Echol Bros. Inc., Staunton, Va., was the general contractor.

Five continuous spans make up main channel crossing

Aerial survey made for Penna. Turnpike

Nearly half the aerial photography for a proposed extension of the Pennsylvania Turnpike from Harrisburg to the outskirts of Philadelphia has been completed, it was announced last week.

A contract for topographic maps covering an area one mile wide and 141 miles long—from a point near Carlisle, Pa., to near Paoli—was let about mid-October. It called for the delivery of the first map on Dec. 15, 1947, and final delivery 100 days later. The maps are to be made to a scale of 1 in. equals 200 ft., and will have 5-ft. contours. The contract price is $86,000.

The aerial surveys are being made for the Pennsylvania Turnpike Commission by the Aero Service Corp., of Philadelphia. Delivery is to be made to Gannett, Fleming, Corddry and Carpenter, Harrisburg, who are consulting engineers to the commission on the location and design of the extension.

Louisiana appoints new road bureau head

J. L. V. Grenier, of Thidodaux, La., has been appointed director of the Louisiana Highway Department. Mr. Grenier, a civil engineer, succeeds R. B. Richardson, who has been acting director since last September 15. Mr. Richardson will assume his former position as engineer in charge of construction and maintenance.

Oregon, Arizona plan huge highway programs

Oregon and Arizona highway developments, actual and prospective are among the largest in the country, it is evident from news released this week.

Completion of Oregon's highway system will require an expenditure of half a billion dollars, the state highway commission estimated in a progress report submitted to the state's new governor, John H. Hall. Of this sum, $53,500,000 is to be expended in the new 3-year program, including $43,500,000 of state and federal aid money and $10,000,000 of forest highway funds.

Under the program contracts totaling $10,000,000 have been completed, while contracts involving $16,500,000 are more than 40 percent completed.

$10 million in Arizona this year

Bids on $4,445,000 worth of highway developments have been called this month by Arizona. Before the end of the year the state expects to spend a record $10,000,000 of the $24,000,000 it has available for road projects.

The bid call sets a new monthly all-time high for the state, W. C. Lefebvre, state highway engineer, reported. His office already has awarded contracts totaling $3,338,000 since the start of the fiscal year, July 1.

The largest single job will be the improvement of a 24-mi. sector of U.S. 66 west of Winslow in the northern part of the state for which the current year's budget appropriates $1,200,000.

The sum of $425,000 is allocated for reconstruction and realignment of the Superior-Miami highway, U.S. 70. Jumping two canyons and at one point piercing a granite shoulder with an 800-ft. tunnel, this 40-ft. road ascends on a 6½ percent grade. It crosses Queen Creek canyon on a 700-ft. steel-arch bridge that has both a vertical and horizontal curve.

Illustrating the trend of costs on this job, a contract for .6 mi. of the road recently was awarded to J. E. Skousen, Mesa, Ariz., on a bid of $124,000.

Completed construction in the state amounted to $5,683,583 for the fiscal year, 1946-47 and $6,181,915 for the previous year. This year, state engineers report, contracts under construction have averaged $6,500,000 a month.

The backlog of highway funds, built through the years by federal matching funds and the state's 5 cents per gallon gasoline tax, includes $12,000,000 for the state's primary system; $6,000,000 in secondary funds and $4,000,000 for county roads.

Charleston-Savannah toll road proposed

Plans have been proposed for the construction of a $20,000,000 toll road which would cut the driving distance between Charleston, S. C., and Savannah, Ga., by 25 miles. The plans have been tentatively approved by all but one member of the Charleston County legislative delegation. Five proposed bridges would be operated as toll structures.

ENGINEERING SCHOOL NEWS

Much engineering school construction under way—Knudsen fellowships at M.I.T.—Higher educational requirements urged by Dean Young of Toronto

Extensive construction work is under way or planned at a number of engineering institutions, as follows:

Representing a new departure in design for student living, construction has started on a new senior dormitory on Memorial Drive, Cambridge, Mass., for the Massachusetts Institute of Technology. The building, designed by Alvor Aalto, research professor of architecture, will accommodate 352 students. Six stories high, it is almost an S-shape in design so that as many of the rooms as possible may face the river. Some of the rooms are for three students, some for two, and there are many single rooms.

The structure to house the new giant cyclotron at Harvard University, Cambridge, Mass., is nearing completion as plans are being made to receive hundreds of tons of steel ingots, some of the largest ever cast, with which to construct the giant magnet. Special molds were made at the Homestead Works of U. S. Steel's Carnegie-Illinois Steel Corp. at Pittsburgh, Pa., in which to form the six ingots of the magnet, each weighing 195 to 258 tons. The building has been under construction for more than a year. When completed it will form an important part of Harvard's new project, the "Science City." The Navy's Department of Research and Development is sharing the cost of construction.

Ground has been broken for the first of two dormitories which the Illinois Institute of Technology will erect to house 218 students.

Washington University, St. Louis, Mo., will erect a $400,000 building to house partially the new Sever Institute of Technology. The 3-story building will be the first of three structures for the physical sciences. The income from the Henry Edwin Sever bequest of $1,250,000 will be used for operation.

Definite steps toward construction of a $200,000 engineering and technology building at Utah State Agricultural College in Logan, Utah, have been announced by college officials. Construction plans await completion of specifications and blueprints by G. Wesley Schaub, Logan architect, and the Utah state building commission, according to J. E. Christensen, dean of the school of engineering. Construction is expected to begin during the 1948-49 school year.

The expansion program of Northeastern University, Boston, Mass., includes its civil engineering department's newly-completed temperature-humidity-controlled cement and concrete testing laboratory. The lab, covering 1,300 sq. ft. is divided into three sections: an aggregate preparation room, cement testing and office space, and concrete mixing, casting and testing area. The latter two sections are temperature and humidity controlled by an air conditioning unit modified by a steam radiator along with two 3,000 and two 1,000-watt stand-by electric strip heaters. Relative humidity of 55 to 60 per cent is regularly maintained. A total of 2200 c.f.m. of air is circulated, of which 600 c.f.m. is fresh. A fog room 10′x8′x9′ is thoroughly insulated by a 2-inch dead air space in the walls and rock wool in the roof. Temperature of this room is maintained at 70°F. Completing the equipment is a 12 cu.ft. deep-freeze unit and sonic modulus apparatus for studies on freezing and thawing of concrete specimens, a cement autoclave for soundness tests, and a recording apparatus to maintain accurate records of operational temperature and humidity. The new lab is under the direction of Prof. Emil A. Gramstorff and operations are in charge of Prof. Ernest L. Spencer.

To assist high-record graduate students in the field of science and engineering to work toward higher degrees at Massachusetts Institute of Technology, Houston Endowment, Inc., established in Texas some years ago by Jesse H. Jones and Mrs. Jones, has provided the institute with $25,000 to be expended in fellowships over a 10-year period. The fund is known as the William S. Knudsen Fellowship in honor of General Knudsen. Selection of students to receive the annual grants and determination of the fields of research will be made by the institute. The first grant will be made on Jan. 1, 1948. Unmarried students may receive up to $1,200 per year, married students, $1,800.

Addressing the annual meeting of the Engineers' Council for Professional Development on Oct. 24, in Montreal, Que., C. R. Young, dean of the faculty of applied science and engineering of the University of Toronto, urged that "faculties and colleges of engineering revise sharply upward their general educational requirements." Dean Young noted the marked benefits of licensing regulations for engineers but said that such legal rights did not necessarily mean that all engineers were equipped to assume full professional status since "one illiterate license holder may offset in the public mind the merits of a score of others. Those who enter professional schools should be screened for humanistic and cultural interests and capacities."

Engineering Objectives Discussed—At a recent conference held at San Jose State College representatives of the engineering departments of four California state colleges redefined the purposes of their institutions in the light of the increased demand for technical education. They also took steps to coordinate their programs, including the less technical functions of the profession. Left to right above are: Herbert F. Langdon, Chico State College; Ralph J. Smith, San Jose, host; Herbert H. Wheaton, Fresno, and Dudley H. Robinson, San Diego.

Work begins in Utah on 37-mi. gas pipeline

Utah Construction Co. has begun excavation for a 37-mi. long pipeline to take natural gas from Salt Lake City to cities in Utah County. The estimated cost of the project is $870,000, according to J. D. Roberts, manager, Mountain Fuel Supply Co. Utah Construction's contract is for $231,000.

Mr. Roberts revealed that lack of pipe, increased freight and steel costs had boosted the cost of the project to about $100,000 over the original estimates. When it was learned delivery of seamless pipe would not be guaranteed before 1951, the company purchased ¼-in. high tensile strength steel plate from the Geneva Steel Co. at Orem, Utah. This was shipped to A. O. Smith Co., Milwaukee, Wis., where it was rolled and welded into 10½-in. pipe.

First carloads of the pipe are now in the coating plant at Lehi, Utah, midway point on the project.

The line will be laid 2 to 2½ ft. underground. Provo, Springfield, and Spanish Fork will be the first cities to be served. Orem and Lindon will be hooked into the system as soon as small-sized pipe for their distribution systems can be obtained, according to announced fuel-company plans.

***Heavy Going**—The heaviest grading work ever carried out by the North Carolina State Highway and Public Works Commission was entailed in construction of a highway project connecting the towns of Lenoir and Blowing Rock. Located on U. S. Route 321, the 3.9-mi. project required 400,000 cu. yd. of grading. Most of the excavation was in rock, and one cut was 90 ft. deep and 500 ft. long. All cuts and fills were made 30 ft. wide, to carry a 20-ft. traffic-bound macadam pavement. E. W. Grannis Co., Fayetteville, N. C., was general contractor on the $349,000 job.*

Delaware River bridge bids called for December 17

Bids on the largest single contract for the construction of the Delaware River bridge below Wilmington, Del., (*ENR* Oct. 16 vol. p. 510) will be opened Dec. 17 at Wilmington.

The Delaware State Highway Department has requested bids for the two main tower foundations and the foundations for two anchorages. The entire contract is to be completed by June 1, 1949.

Formal notice to bidders was issued by Frank V. duPont, chairman of the State Highway Commission, and Lieut.-Gen. Eugene Reybold, who heads the Delaware crossing division of the department.

General Reybold said the work involves the following approximate quantities: Displacement of tower piers caissons, 57,000 cu. yd.; displacement of anchorage caissons, 135,000 cu. yd.; concrete required exclusive of caissons, 75,000 cu. yd. In addition, 3,200,000 lb. of reinforcing steel will be required, exclusive of that used in caissons and approximately 46,000 cu. ft. of granite masonry.

Begin sub-soil checks for Conestogo Dam

Sub-soil investigations are being carried out by diamond drilling on the proposed site of the Conestogo Dam, a 2,400-ft. wide concrete structure which will form another part of flood control measures being carried out by Canada's Grand River Conservation Commission.

The dam is to be located at Glen Allan, Ont., north of Kitchener, and will be larger than the Shand Dam, built some years ago by the commission on the Grand River proper at Fergus, Ont. (*ENR* Aug. 20, 1942, vol. p. 263).

Galt, Brantford, Paris and many other smaller communities on the lower reaches of the Grand River still suffer heavy damage from floods.

Reclamation association names new officers

At the recent annual meeting of the National Reclamation Association at Phoenix, Ariz. (*ENR* Nov. 6, vol. p. 624) Harry E. Polk was elected president; Clifford H. Stone, first vice-president; J. E. Sturrock, second vice-president; H. M. Ahlquist, treasurer; and Don McBride, secretary-manager. Mr. Polk is publisher of the Williston, N. D. "*Herald*," and last year was first vice-president.

Massachusetts highways criticized by committee

The Massachusetts highway system is in a "shameful condition," the Legislative Recess Committee on Highways and Motor Vehicles had reported last week. The committee said its members were "amazed and shocked" at the extent to which the entire system has been permitted to deteriorate.

The group announced it would attempt to set up a 10-year construction program, together with suggestions for financing and the necessary expansion of the Department of Public Works.

Criticizing the present highway system, the report charged that over 600 miles of its roads are "either obsolete or worn out, or both, and should be reconstructed."

Arkansas basin group announces reorganization

In order to present a stronger claim to Congress for Arkansas River development funds, the Arkansas River Basin Association, organized after the "worst flood on record" in 1943, planned its reorganization on a greatly expanded basis at a recent meeting at Little Rock.

Association leaders voted to meet again Dec. 10 to complete the reorganization program.

OBITUARY

Col. Elliott Vandevanter, Ret. Corps of Engineers, died in Washington, D. C., Nov. 4. A civil engineering graduate of Cornell University, 1908, Colonel Vandevanter was an engineering contractor in Baltimore, Md., until 1917, when he was commissioned in the Corps of Engineers. From June, 1933, to 1937 he was officer in charge of the Marine Design Branch, civil division, Office of the Chief of Engineers in Washington. In 1937 he went to the Canal Zone where he was battalion commander of the 11th Engineers. Following this assignment he was sent to St. Louis, Mo., where he was assistant to the division engineer, Upper Mississippi Valley division, and in 1942 was assistant to the district engineer at Chicago. He retired from the Army in 1944.

Archibald W. Nance, 60, civil engineer, died at Pittsburgh, Pa., Nov. 7. A graduate of the school of engineering, University of Wisconsin, 1910, he joined the Farris Engineering Co. and with that company he specialized in bridge designing. He was a veteran of the first world war.

Fred F. Majors, civil engineer, died in Norfolk, Va., Nov. 5.

Lt.-Col. John H. Parks, 73, died in Calgary, Alta., Oct. 21. He was awarded the Distinguished Order and the Order of the British Empire for exceptional service performed with the Royal Engineers (during the first world war). From 1925 to 1945 he was district engineer in western Canada for the Board of Railway Commissioners.

Roy Lee Kelley, retired civil engineer, died recently in Oneida, N. Y. He worked for N. Y. State for 35 years, serving on the engineering staff of the Barge Canal and then with the highway department. Upon retirement from state service three years ago, Mr. Kelley organized the Oneida Service Corp. to make engineering surveys.

Stanley V. Meigs, 61, died Oct. 26 at Los Angeles, Calif. He was associated with the Santa Fe Railroad for 30 years, serving as assistant construction engineer for the Los Angeles Union Station and later becoming the terminal's engineer.

Robert P. Gilbert died Oct. 9 near Merced, Calif., from injuries suffered in an automobile accident. He was assistant civil engineer in charge of a survey party for the California reclamation board.

John F. Byxbee, Jr., 70, city engineer of Palo Alto, Calif., for 35 years, died Oct. 28. He had been named assistant city engineer upon graduation from Stanford University's civil engineering department, was appointed city engineer in 1906, and remained in active service until his retirement in 1941. Since that time he had been acting in a consulting capacity and as a member of the planning commission. City improvements for which his foresight was responsible are a planned program of land acquisition and harbor improvement, the public utility system and grade separations.

Nathan Hetler, 74, former superintendent of the Warsaw, Ind., water works and former building commissioner of that city, died Nov. 3.

Henry Coster Steers, 57, retired vice-president of Henry Steers, Inc., construction firm of Rye, N. Y., died Nov. 5.

Karl J. Smith, 64, former deputy county engineer for Mahoning County, Youngstown, Ohio, died Nov. 5 at that city.

Ezra F. Scattergood, 72, leading figure in building the $315,000,000 power system of the Los Angeles, Calif., department of water and power, died Nov. 15. He was an authority on hydraulic and electrical engineering. He helped plan the Owens Valley-Los Angeles aqueduct and also was active in planning the Hoover Dam-Los Angeles transmission line.

Because it was nearly double the estimate, the $274,100 bid for subsurface exploration for the proposed Chesapeake Bay crossing has been rejected, Robert M. Reindollar, chairman of the Maryland State Roads Commission has reported.

MAJOR MEETINGS

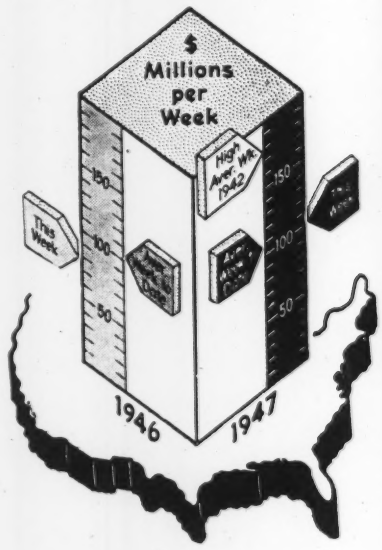
Highway Research Board, 27th annual meeting, National Academy of Sciences and National Research Council, Washington, D. C., Dec. 2-5.

National Society of Professional Engineers, Statler Hotel, Buffalo, N. Y., Dec. 4-6.

Society for Experimental Stress Analysis, annual meeting, Hotel Pennsylvania, New York, N. Y., Dec. 4-6.

American Society of Agricultural Engineers, winter meeting, Stevens Hotel, Chicago, Ill., Dec. 15-17.

CONSTRUCTION ACTIVITY



As Reported this week to . . .
Engineering News-Record

CONTRACT VOLUME

Continental U. S. Only (Thousands of Dollars)

	Week of Nov. 20 1947	Cumulative 1947 (47 wks.)	Cumulative 1946 (47 wks.)
Federal	$4,191	$558,320	$584,888
State & Mun.	42,655	1,634,985	1,315,188
Total Public	$46,846	$2,193,305	$1,900,076
Total Private	54,084	2,845,741	2,890,529
U. S. Total	$100,930	$5,039,046	$4,790,605

WHERE CONSTRUCTION ACTIVITY ORIGINATED THIS WEEK

Dollar Volume (Thousands)

Type of Work	This Week	Cumulative 1947 (47 wks.)	Cumulative 1946 (47 wks.)
Waterworks	$1,667	$108,062	$100,731
Sewerage	6,549	156,862	105,210
Bridges	4,739	171,431	120,878
Highways	18,766	726,260	721,469
Earthwork, Waterways	2,910	275,189	318,934
Buildings, Public	7,941	527,815	383,908
Industrial	7,079	807,433	961,637
Commercial	44,816	1,662,378	1,746,000
Unclassified	6,463	603,616	331,838

NOTE: Minimum size projects included are: Waterworks and waterway projects, $22,500; other public works, $40,000; industrial buildings, $55,000; other buildings, $205,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1947 (47 wks.)	Cumulative 1946 (47 wks.)
NON-FEDERAL		$1,343,091
Corporate Securities	Figures	393,920
State and Municipal	not	724,171
Fed. Aid Highway	available	225,000
FEDERAL		1,714,695
Total Capital		$3,057,786

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Nov.'47	429.30	206.36
Building Cost	Nov.'47	322.27	174.21
Volume	Oct.'47	234	103